IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

GENERAL ACCESS SOLUTIONS, LTD.,	§	
	§	
Plaintiff,	§	
	§	
v.	§	
	§	
CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, VERIZON SERVICES CORP., VERIZON BUSINESS GLOBAL LLC, VERIZON BUSINESS NETWORK SERVICES LLC, VERIZON CORPORATE SERVICES GROUP INC., VERIZON DATA SERVICES, LLC, and VERIZON ONLINE, LLC,	§	NO. 2:22-CV-00394-JRG
	§	
Defendants,	§	
	§	
ERICSSON, INC.,	§	
	§	
Intervenor-Defendant.	§	

CLAIM CONSTRUCTION ORDER

In this patent case, General Access Solutions, Ltd. (GAS), alleges infringement by Defendant Verizon Wireless and its affiliates of claims from U.S. Patents 7,230,931 and 9,426,794. These patents relate generally to wireless communication systems. *See* '931 Patent at 3:28–31 ("The present invention is directed . . . to a burst packet transmission media access system using selectively adaptable beam forming in a fixed wireless access network."); '794 Patent at 3:45–47 ("[T]he present invention relates to [an] apparatus, and an associated method, for providing WLAN (wireless local area network) service at a subscriber station of [a] fixed wireless access communication system.").

The parties dispute the scope of nine terms. For each term, GAS urges either a "plain and ordinary meaning" construction or "no construction required." Defendants, on the other hand, propose specific language for each term. Having considered the parties' briefing and arguments during a December 15, 2023 hearing, the Court resolves the disputes as follows.

I. BACKGROUND

A. U.S. Patent 7,230,931

The '931 Patent concerns maximizing spectral efficiency in wireless systems. *See generally* '931 Patent at 9:1–12. Generally, the patent describes a system with base stations that transmit downlink signals to, and receive uplink signals from, "subscriber premises." *Id.* at 11:57–64. Each base station covers a cell divided into "sectors." *Id.* at 12:25–27. Narrow directed beams operate within each sector to target subscribers, which the patent calls "beam scanning." *Id.* at 28:1–12. But the system also uses broadcast beams at the start of each frame for synchronization, rather than a round-robin polling scheme, which might negatively affect synchronization when using a large number of scanning beams to cover a sector. *See generally id.* at 28:24–50. The use of both beam scanning and broadcast beams for each frame maximizes frequency re-use and the number of subscribers each base station can support. *Id.* at 27:61–67.

Figure 14 (below) illustrates the principle. That figure shows parts of two time division duplex (TDD)[1] frames divided by a frame boundary. The figure shows both the transmit and receive periods (pink and blue, respectively) of the first frame, and part of the transmit portion of the second frame (green). For each frame, a spread spectrum broadcast beam transmits start-of-

[1] "In TDD, a single channel is used for transmission and reception and specific periods of time (i.e., slots) are allocated for transmission and other specific periods of time are allocated for reception." '931 Patent at 6:2–5.

frame fields (SOF1, SOF2) and beam-map fields, but distinct Scan Beams A & B transmit the remainder of the frames. As described with reference to Figures 12 and 13, the broadcast beam covers all of the sector, thus helping to maintain synchronization with all the devices located within the sector, while Scan Beam A and Scan Beam B each cover a different 10 degrees of the sector. *See generally* '931 Patent at 29:1–33.

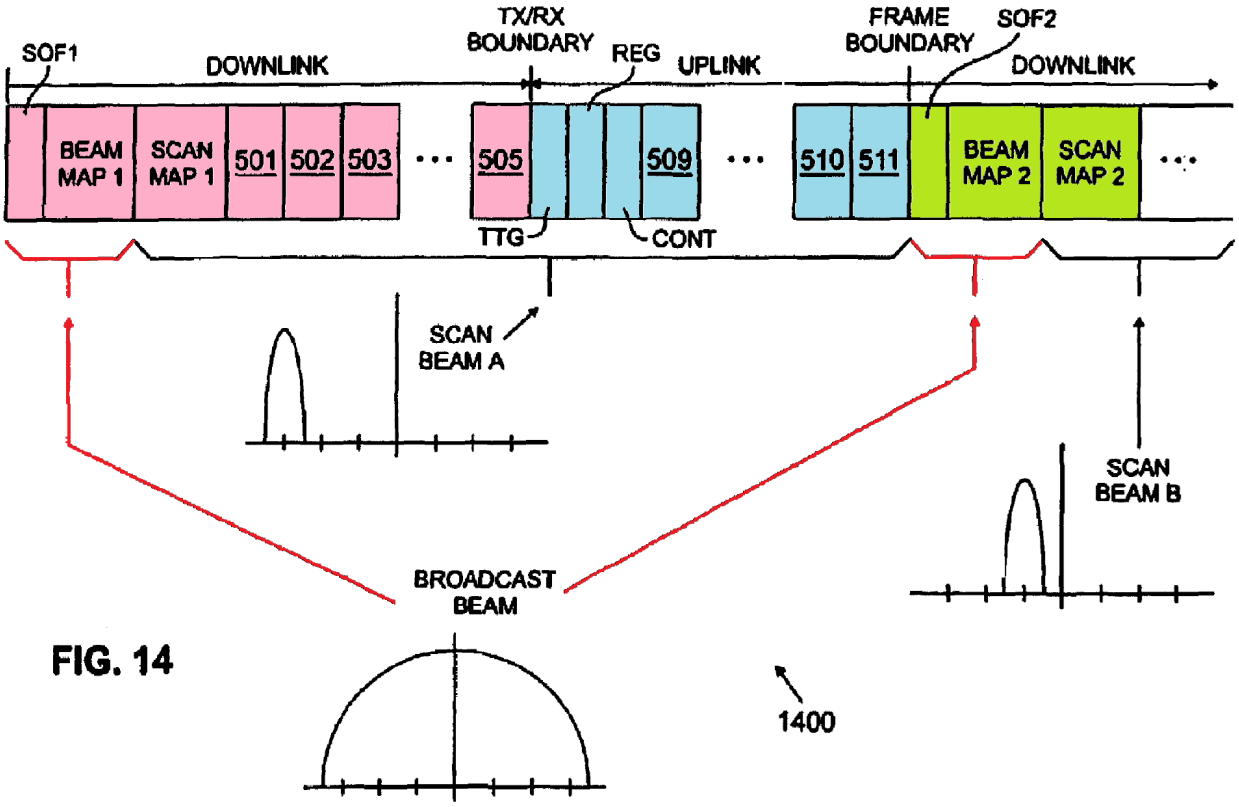

FIG. 14

GAS only asserts Claims 28 and 29, which depend from Claim 1 and Claim 19, respectively. Claim 1, which includes most of the disputed terms from this patent, recites:

> 1. For use in a **wireless access network** comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with **wireless access devices** disposed at a plurality of **subscriber premises** in an associated cell site of said **wireless access network**, a transceiver associated with a first of said plurality of base stations comprising:

> transmit path circuitry associated with a beam forming network capable of transmitting directed scanning beam signals each directed to substantially only **wireless access devices** within a different one of a plurality of **sectors** of a cell site associated with said first base station, wherein said transmit path circuitry
>
> transmits, at a start of a TDD frame, a broadcast beam signal to **wireless access devices** within more than one of said **sectors**, the broadcast beam signal comprising a **start of frame field**, and
>
> subsequently transmits, in a downlink portion of said TDD frame, first downlink data traffic to substantially only **wireless access devices** within one of said **sectors** using one of said directed scanning beam signals.

'931 Patent at 30:31–52 (disputed terms bolded). Claim 28 then recites:

> 28. The transceiver as set forth in claim 1 wherein said transmit path circuitry transmits, **in said downlink portion of said TDD frame**, second downlink data traffic to substantially only **wireless access devices** within an other of said **sectors** using an other of said directed scanning beam signals.

Id. at 33:4–9 (disputed terms bolded). Claim 19 and Claim 29 recite methods of communicating with base stations using analogous language. *See id.* at 32:16–34, 34:1–6.

The parties proffer six terms from the '931 Patent for construction, which are bolded *supra*. This Court previously considered issues related to three of those terms in *General Access Solutions, Ltd., v. Sprint Spectrum L.P.*, No. 2:20-CV-00007-RWS (*Sprint*). *See generally* Order, Dkt. No. 63-1 (construing "wireless access devices" and "subscriber premises"); *see also* Order, Dkt. No. 63-14 at 3–17 (prohibiting GAS "from eliciting evidence, testimony or argument that sector means 'any portion of a cell site' at trial").

B. U.S. Patent 9,426,794

The '794 Patent relates to an apparatus and method "for providing WLAN (wireless local

area network) service at a subscriber station of [a] fixed wireless access communication system." '794 Patent at 3:45–47. The patent generally describes the invention as a wireless communication system with first and second transceivers. *Id.* at [57]. The first transceiver communicates with a base station, and the second transceiver is coupled to the first transceiver and communicates with a first mobile station. *Id.* The first transceiver receives, from the base station, a first downlink signal intended for the first mobile station and transmits the first downlink signal to the second transceiver, which re-transmits the first downlink signal to the first mobile station as a second downlink signal. *Id.*

The independent claims focus on the mobility of mobile stations between coverage areas of transceivers and base stations. Each independent claim requires the "second transceiver" to monitor signal characteristics of mobile stations. *See id.* at 10:38–44 (Claim 1); *id.* at 11:19–22 (Claim 6). Based on those detected signal characteristics, the second transceiver "routes information" to the mobile stations. *Id.*

II. GENERAL LEGAL STANDARDS

"[T]he claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). As such, if the parties dispute the scope of the claims, the court must determine their meaning. *See, e.g.*, *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1317 (Fed. Cir. 2007) (Gajarsa, J., concurring in part); *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996), *aff'g*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc).

Claim construction, however, "is not an obligatory exercise in redundancy." *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). Rather, "[c]laim construction is a matter of [resolving] disputed meanings and technical scope, to clarify and when necessary to

explain what the patentee covered by the claims . . . .” *Id.* A court need not “repeat or restate every claim term in order to comply with the ruling that claim construction is for the court.” *Id.*

When construing claims, “[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning.” *Aventis Pharm. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1312–13). Courts must therefore “look to the words of the claims themselves . . . to define the scope of the patented invention.” *Id.* (citations omitted). The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313. This “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Intrinsic evidence is the primary resource for claim construction. *See Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (citing *Phillips*, 415 F.3d at 1312). For certain claim terms, “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314; *see also Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”). But for claim terms with less-apparent meanings, courts consider “those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean . . . [including] the words of the claims themselves,

the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Phillips*, 415 F.3d at 1314.

III. THE LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the art is the skill level of a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In resolving the appropriate level of ordinary skill, courts consider the types of and solutions to problems encountered in the art, the speed of innovation, the sophistication of the technology, and the education of workers active in the field. *Id.* Importantly, "[a] person of ordinary skill in the art is also a person of ordinary creativity, not an automaton." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007).

Here, neither party proffers a level of ordinary skill in the art for analysis. The Court therefore adopts the level of skill urged by Sprint in its Petition for IPR, which is the only proposed level of skill the Court finds in the record: "a Bachelor of Science in Computer Science, Computer Engineering, Electrical Engineering, or an equivalent field as well as at least two years of academic or industry experience in any type of wireless networking field." Pet. for *Inter Partes* Review, Dkt. No. 67-15 at 9–10.

IV. THE DISPUTED TERMS

A. "wireless access network" ('931 Patent, Claims 1, 19); "wireless access devices" ('931 Patent, Claims 1, 19, 28, 29)

GAS's Construction	Defendants' Construction
Plain and ordinary meaning	**wireless access network:** "fixed wireless access network" **wireless access devices:** "fixed, externally mounted wireless access devices"

This dispute concerns lexicography and, more specifically, whether the applicant defined these terms to exclude cellular networks. Defendants base their argument for such an exclusion entirely on the specification. They first stress the patent's explanation that "[t]he *present invention* is directed [to] using selectively adaptable beam forming in a *fixed wireless access network*." Dkt. No. 66 at 3 (quoting '931 Patent at 3:28–31). They also point to the patent's description of Figure 1 as an "exemplary *fixed* wireless access network." *Id.* (quoting '931 Patent at 10:51–53). Further, note Defendants, the patents describe the "subscriber premises" as "transmit[ting] and receiv[ing] via fixed, externally-mounted antennas[.]" *Id.* at 4 (quoting '931 Patent at 11:64–66). In their view, "[b]oth the repeated emphasis on the invention filling a 'need for a fixed wireless access network' with improvements, and the omission of cellular or mobile [devices], reinforces that the claimed invention is directed only to fixed wireless access networks and devices and not to cellular networks." *Id.* Finally, citing *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322 (Fed. Cir. 2009), Defendants assert the patent uses "fixed wireless access network" and "wireless access network" interchangeably, which amounts to lexicography. *Id.* at 5.

In resisting Defendants' construction, GAS points to both the specification and the prosecution history. Regarding the former, GAS notes the '931 Patent incorporates a reference that characterizes cellular networks as "wireless communications systems." Dkt. No. 63 at 12. According to GAS, "the specification emphasizes the similarities between fixed wireless and mobile wireless networks." *Id.* (citing '931 Patent at 5:23–25 ("Fixed wireless broadband systems use a group of transceiver base stations to cover a region in the same manner as the base stations of a cellular phone system.")). As for the prosecution history, GAS notes the Office issued a rejection based in part on a reference's disclosure of mobile devices as "wireless access

devices." *Id.* at 13 (citing Non-Final Rejection (Jan. 10, 2006), Dkt. No. 63-8 at 2–3). This, says GAS, shows a skilled artisan would have understood the "wireless access devices" of the patent are not necessarily "fixed." *Id.*

To start, the Court sees no dispute between the parties over the ordinary meaning of these terms. Defendants implicitly concede the ordinary meaning of "wireless access network" is not limited to "fixed" networks, and that the ordinary meaning of "wireless access devices" is not limited to "fixed" devices. *See* Hr'g Tr., Dkt. No. 81 at 90:4–5 (arguing "the patentee used lexicography to define wireless access network to mean fixed wireless access [network]"). Thus, for the Court to adopt Defendants' construction, they must show "clear and unmistakable statements by the patentee that limit the claims, such as 'the present invention includes . . .' or 'the present invention is . . .' or 'all embodiments of the present invention are . . . .'" *Pacing Techs., LLC v. Garmin Int'l, Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015).

But "[w]hile descriptions 'of the "present invention" as a whole' could limit the scope of the invention, . . . use of the phrase 'present invention' or 'this invention' is not always so limiting, such as where the references . . . are not uniform, or where other portions of the intrinsic evidence do not support applying the limitation to the entire patent." *Cont'l Circuits LLC v. Intel Corp.*, 915 F.3d 788, 798 (Fed. Cir. 2019). Here, the "present invention" language distinguishes between "wireless access systems" generally and use of the claimed system in a "fixed wireless access network" '931 Patent at 3:28–31. That language strongly suggests "wireless access systems" are broader than "*fixed* wireless access networks," which cuts against Defendants' position. Of course, the phrases at issue are "wireless access *networks*" and "fixed wireless access networks," but the Court sees little, if any, difference between "systems" and "networks" in this context. The differences in the claims' preambles also support GAS's position,

with Claims 1 and 19 referring only to "wireless networks" and Claim 10 referring to "a *fixed* wireless network." *Compare id.* at 30:31 (reciting, in Claim 1, "for use in a wireless access network"), *id.* at 32:16 (reciting the same in Claim 19), *with id.* at 31:22 (reciting, in Claim 10, "[a] fixed wireless access network").

As for Defendant's reliance on *Edwards Lifesciences*, that decision is distinguishable. There, the trial court construed "graft" to mean "an intraluminal device that is used in unitary fashion to substitute, repair, or replace a missing or defective part of a vessel." *Edwards Lifesciences,* 582 F.3d at 1326. It reasoned the asserted patent used "graft" as shorthand for "intraluminal graft" and referred to "the invention" as an "intraluminal graft." *Id.* In addition, the court concluded the claimed "graft" excluded traditional surgically implanted vascular grafts because (1) all disclosed embodiments had wires and (2) the claims required the graft components to be used together, neither of which were features of traditional grafts. *Id.*

On appeal, the parties made similar arguments to those made here by GAS and Defendants. Edwards stressed some, but not all, of the claims modified "graft" with "intraluminal." *Id.* at 1328. In response, Cook asserted the specification consistently described the graft as intraluminal. *Id.* at 1329.

Affirming the trial court's decision, the appellate court found the specification used "graft" and "intraluminal graft" interchangeably. For support, it cited a number of references to item 10 of the drawings as both "graft 10" and "intraluminal graft 10." *Id.* The specification also frequently referred to the "present invention" and "this invention" as an "intraluminal graft." *See e.g.*, U.S. Patent 6,582,458 at 1:40–41 ("The present invention is directed to an alternative form of intraluminal graft which provides an alternative to the known grafts."); *id.* at 1:45–46 ("the present invention consists in [sic] an intraluminal graft").

Here, the Court sees at least three distinctions from the facts of *Edwards Lifesciences*. First, the "present invention" language of the '458 Patent was more forceful, stating what the present invention "is" rather than, like the '931 Patent, how or where it is used. Also, both the Title and Abstract of the '458 Patent bolstered that limiting "present invention" language. *See* '458 Patent at [54] ("Intraluminal Graft"); *id.* at [57] (describing the invention as "an intraluminal graft"). Second, whether the network and devices of the '931 Patent's claims are limited to a fixed network and fixed devices is far less related to the claim limitations than whether a graft is "intraluminal" or "traditional." Put differently, whether the network and devices are fixed or cellular has little to do with how the "transmit path circuitry" of Claim 28 operates or how Claim 29's method steps are implemented. Third, in one claim that did not modify "graft" with "intraluminal," the claim recited other structural limitations that implicitly imposed that requirement. *See Edwards Lifesciences*, 582 F.3d at 1330 (citing Claim 10 of the '458 Patent). There are no such limitations in the claims at issue.

In the end, the Court concludes, based on the intrinsic record, the applicant did not so clearly and unmistakably limit the scope of these terms as Defendants urge. *See also* Order, Dkt. No. 63-1 at 12 (concluding "Defendants' proposed fixed-wireless-access-device limitation is not appropriate"). Accordingly, the Court rejects Defendants' "fixed" and "externally mounted" requirements and will give these terms a "plain and ordinary meaning" construction.

B. "subscriber premises" ('931 Patent, Claims 1, 19)

GAS's Construction	Defendants' Proposal
Plain and ordinary meaning	"subscriber buildings or places in a building"

The parties dispute the ordinary meaning of this term. Whereas Defendants propose a specific construction, GAS argues no construction is necessary because the term's ordinary

meaning is clear. Dkt. No. 63 at 14. Defendants' construction stems, in part, from Judge Schroeder's *Sprint* reasoning that "'premises' is used [in the '931 Patent] according to its customary meaning to refer to a building, a place in a building or the like, not simply to any location." Order, Dkt. No. 63-1 at 20. GAS accuses Defendants of "removing the most important part" of that reasoning—"or the like." Dkt. No. 69 at 4 (asserting "premises" may also include "a piece of real estate; house or building and its land").

Defendants' desire for construing this term appears driven by GAS's *Sprint* position that a "premises" can be "any location." *See* Dkt. No. 66 at 8 (noting "GAS agrees this term should have its plain and ordinary meaning, but fails to inform the Court that the 'plain and ordinary meaning' it advocated in the Sprint case was 'any location'").

Judge Schroeder's reasoning in *Sprint* is, of course, sound. As he explained:

> [T]he '931 patent provides that "[s]ubscriber premises 121–123 may comprise many different types of residential and commercial buildings, including single family homes, multi-tenant offices, small business enterprises (SBE), medium business enterprises (MBE), and so-called "SOHO" (small office/home office) premises." '931 patent at 11:64–12:4. Under the doctrine of *ejusdem generis*, this suggests that premises are buildings or similar structures. . . . Indeed, understanding "premises" as a building or the like comports with the customary meaning of the term. *See, e.g.*, *Webster's New World Dictionary* at 1063 (3d college ed. 1993) (defining "premises" to mean "a piece of real estate; house or; building and its land *[*keep off the *premises]*" (brackets and italics in original)), Docket No. 88-4 at 4. Ultimately, Plaintiff's arguments and evidence do not support straying from the plain meaning of "premises."

Order, Dkt. No. 63-1 at 20–21. Based on this reasoning, which GAS does not criticize, the Court again rejects that "premises" means "any location" and construes the term as "buildings, places in buildings, or the like, of a subscriber."

C. "sector[s]" ('931 Patent, Claims 1, 19, 28, 29)

GAS's Construction	Defendants' Construction
Plain and ordinary meaning. Alternatively, "a portion of the geographic area around the cell site."	"areas covering predefined arcs around the cell site, each covered by a different antenna(s)." A sector cannot be "the area covered by any one directed scanning beam."

1. Summary of the Arguments

Because of its dependency on Claim 1, Claim 28 requires "transmit path circuitry . . . capable of transmitting directed scanning beam signals each directed to substantially only wireless access devices within a different one of a plurality of sectors of a cell site." '931 Patent at 30:38–42. The circuitry must transmit "a broadcast beam signal to wireless access devices within more than one of said sectors" and then transmit data "to substantially only wireless access devices within one of said sectors using one of said directed scanning beam signals." *Id.* at 30:44–52. Similarly, because of its dependency on Claim 19, Claim 29 concerns a method of communicating with base stations including the steps of (1) "transmitting . . . a broadcast beam signal to wireless access devices within more than one of a plurality of sectors within [an] associated cell site," and (2) transmitting data "to substantially only wireless access devices in a first of said sectors using a first directed scanning beam signal." *Id.* at 32:24–34. The parties dispute the ordinary meaning of "sector" and, more specifically, whether and to what extent a "sector" must be tied to some base-station infrastructure, such as antennas or RF modems.

GAS accuses Defendants of importing limitations into the claims. It points first to a definition of "sector" as "a region or district of a larger geographical area." Dkt. No. 63 at 15 (citing Shorter Oxford English Dict., Dkt. No. 63-10 at 2733 (5th ed. 2002)). Citing Figures 12

and 13, it contends the coverage area of the broadcast beam signal is further subdivided into smaller sectors, "each covered by a separate directed scanning beam signal." *Id.* at 17 (citing '931 Patent at 28:3-12). According to GAS, Defendants' requirement that each "sector" must be covered by a different antenna would read out the embodiment shown in Figures 12 and 13. *Id.* at 19.

Asserting a sector must be associated with a specific antenna or group of antennas, Defendants point first to the claims. Because Claims 28 and 29 require sending a second directed beam to devices within a second sector, Defendants say only their construction makes sense. Dkt. No. 66 at 10. If a "sector" is just the coverage area of a scanning beam, the existence of the second beam would establish the second sector, rendering the claim language superfluous. *Id.*

Defendants next cite the written description, which explains a cell is divided into "M sectors," and "each sector generally covers a 360/M degree arc around the cell site." Dkt. No. 66 at 11 (citing '931 Patent at 8:13–15). They also point to Figure 2, which shows three base stations, each with four 90-degree sectors. Dkt. No. 66 at 11. For their requirement that each sector must be "covered by a different antenna," Defendants note the patent's explanation that "[e]ach RF modem uses an individual antenna to transmit and to receive in its assigned sector." *Id.* (citing '931 Patent at 16:4–23).

Defendants then rely on the prosecution history. In response to one rejection during prosecution, the applicant amended the last phrase of Claim 1 to limit the transmit path circuitry to transmitting downlink traffic "to substantially only ~~at least one of said~~ wireless access devices within one of said sectors using ~~at least~~ one of said directed scanning beam signals." Am. & Resp. to Office Action, Dkt. No. 67-6 at PageID# 999. According to Defendants, this amendment and the accompanying remarks establish "a 'sector' cannot be just 'any portion of the geographic

area around the cell site,' and in particular cannot be the area covered by any one directed scanning beam." Dkt. No. 66 at 14.

Finally, Defendants point to statements by GAS during two *inter partes* review proceedings. In one proceeding, say Defendants, GAS agreed the broadest reasonable interpretation of "sector" is "arc of a cell site served by an individual antenna or antenna array." Dkt. No. 66 at 15. In another proceeding, GAS explained "each base station is equipped with multiple antennas, with different antennas covering different 'sectors' of the cell," thus recognizing a "sector" is "a specific area with its own 'different antennas.'" *Id.* at 15 (quoting Patent Owner's Prelim. Resp., Dkt. No. 67-12 at 4).

2. Analysis

Considering first the ordinary meaning of "sector" in the context of the '913 Patent, the Court agrees with Defendants. Most, if not all, of the intrinsic and extrinsic evidence relates "sector" to some physical or logical aspect of the cellular base station. For example, one industry reference offered by GAS defines "sector" as "[a] sub area of a cell" and explains "[a] radio link within a sector can be identified by a single logical identification belonging to that sector." Vocabulary for 3GPP Specifications, Dkt. No. 63-11 at 28. Another GAS exhibit differentiates between "omnidirectional antennas" and "sectored directional antennas." *See Wireless Commnc'ns*, Dkt. No. 63-6 at 27; *see also Wireless Commnc'ns*, Dkt. No. 67-14 at 58 ("The technique for decreasing co-channel interference and thus increasing system capacity by using directional antennas is called *sectoring* . . . . When sectoring is employed, the channels used in a particular cell are broken down into sectored groups and are used only within a particular sector . . . ."); *id.* at 59–60 (noting that, "because sectoring uses more than one antenna per base station, the available channels in the cell must be subdivided and dedicated to a specific

antenna"). These references show a "sector" is part of the system design and tied to hardware rather than an arbitrary area around a cell site.

Indeed, the patent's use of "sector" is consistent with that extrinsic evidence. Specifically, the patent explains "each sector of a cell site is served by an individual RF modem," and "[e]ach RF modem uses an individual antenna to transmit and to receive in its assigned sector." '931 Patent at 16:8–13. "The antennas *for different sectors* in the same cell site are mounted on the same tower and are located only a few feet apart." *Id.* at 16:13–15 (emphasis added). With this approach, the patent aims "to prevent interference between antennas in different sectors of the same cell site." *Id.* at 16:20–21. Like the evidence discussed *supra*, these excerpts associate a "sector" of a cell site to something physical—either an RF modem, one or more antennas, or both.

In fact, GAS doesn't dispute that Defendants' construction is at least a reasonable interpretation of "sector." During the hearing, for example, GAS explained that replacing an omnidirectional antenna with four directional antennas that each cover 90 degrees results in four sectors. *See* Hr'g Tr., Dkt. No. 81 at 13:5–10. *See also id.* at 13:22–23 (agreeing that "sector" is broad enough to include Defendants' construction); *id.* at 47:2–3 (recognizing Defendants' interpretation of "sectorization" as "old technology"). And GAS once told the PTAB that "[i]n modern cellular wireless networks, each base station is equipped with multiple antennas, with different antennas covering 'sectors' of the cell." Patent Owner's Prelim. Resp., Dkt. No. 67-12 at 4. "In such an arrangement, each antenna transmits to, and receives transmission from, wireless devices in its sector of the cell." *Id.* (calling Figure 2 of the '931 Patent "an illustration of a set of base stations, each equipped with four antennas covering a 90° sector of the cell serviced by the base station").

Problematically for GAS, it provides little, if any, evidence of a possible "ordinary meaning" in line with its position. At best, it points to a general-purpose definition of "sector" as "a region or district of a larger geographical area," as in a map. Dkt. No. 63 at 15 (citing Shorter Oxford English Dict., Dkt. No. 63-10 at 2733 (5th ed. 2002)). But that general definition is divorced from the relevant art and not how a skilled artisan would understand the term. Given that, the Court accepts Defendants' construction as the "ordinary meaning" for "sector," and the issue becomes whether there is clear and unmistakable lexicography or disclaimer that alters that meaning.

GAS's arguments on that issue are not persuasive. First, GAS argues the patent is not about "sectorization," but about beamforming. As it explained during the hearing:

> [W]e can take [the] physical coverage area of an antenna and we can divide it into smaller regions, and we can use beam forming to have more focused signals directed to smaller wedges of that pie [as shown in Figure 12A]. And in that context, it is equally appropriate to use the term "sector" to refer to those smaller portions that are addressed by individual directed scanning beam signals.

Hr'g Tr., Dkt. No. 81 at 13:11–18. But nowhere does GAS show *why* it is "appropriate" to call the smaller wedges "sectors"; it simply concludes that to be so. The patent, however, undercuts that position by referring to the "wedges" as "directed scanning beams" or a "sector beam set" covering a 90-degree wide sector. *See* '931 Patent at 28:1–23. Nowhere does the patent refer to the "wedges" as "sectors."

Elsewhere, GAS suggests Defendants' construction results in an inoperable invention. Specifically, it argues, because Defendant's construction requires an antenna for every sector, "[i]t would be impossible for any antenna ever to transmit directed scanning beam signals into two sectors." Hr'g Tr., Dkt. No. 81 at 11:21–22.

The Court disagrees with that conclusion because it is not persuaded Defendants'

construction renders the invention unworkable. Claim 29 is a method claim devoid of *any* structure, and Claim 28 does not recite an antenna transmitting *any* signals, much less directed scanning beams into two sectors. Claim 28 only requires "transmit path circuitry," and GAS proffers no reason why that circuitry could not transmit scanning beams to more than one sector if Defendants' construction were adopted. But even if Defendants' construction were to render the claims inoperable, "courts may not redraft claims, whether to make them operable or to sustain their validity." *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004).

To summarize, GAS's reasoning reverses the proper analysis. Rather than starting with the ordinary meaning of "sector," GAS bases its argument only on the context of the claim language and what, in its opinion, makes the claimed invention work. In doing so, it rejects the only "ordinary meaning" for the term supported by the record. The Court must reject that approach, even if it renders the claim inoperable, and therefore construes "sectors" as "areas defined by an arc around the cell site, each covered by its own antenna."[2]

D. "start of frame field" ('931 Patent, Claims 1, 19)

GAS's Construction	Defendants' Construction
No construction necessary. Alternatively, "a field used to indicate the start of a frame"	"the field entitled Start-of-Frame (SOF) Field that is used to indicate the start of a frame"

Each independent claim requires transmitting, or hardware capable of transmitting, a "broadcast beam signal comprising a start of frame field." *See* '931 Patent at 30:46–47 (Claim 1); *id.* at 32:28–30 (Claim 19). Defendants argue this term should be construed as a

[2] As a corollary to its construction, the Court holds a "sector" cannot be the area covered by any one directed scanning beam. As shown in Figures 12–14, "directed scanning beams" are beam-formed *within* sectors, whereas broadcast beams cover the whole sector for synchronization purposes.

specifically titled field based on the specification. Dkt. No. 66 at 20. But according to GAS, "[t]he field's exact title has no bearing on its meaning or its technical function." Dkt. No. 63 at 25. Moreover, unlike those portions of the specification on which Defendants rely, the claims do not capitalize "start of frame field." *Id.*

The Court agrees with GAS. At most, the specification "names" the field twice. *See* '931 Patent at 19:62–63 (explaining "[t]he start of every frame includes a Start-Of-Frame (SOF) field"); *id.* at 28:44–45 ("By introducing spread spectrum and a broadcast beam operating on the Start of Frame (SOF) field of every frame . . . ."). The other references to "start of frame field" do not. *See, e.g.*, '931 Patent at [57] ("The transmit path circuitry transmits at a start of a TDD frame a broadcast beam signal comprising a start of frame field . . . ."); *id.* at 29:7–9 ("TDD signal 1400 comprises a first TDD frame having a downlink portion comprising a first start-of-frame field (SOFl) . . . ."); *id.* at 29:22–23 ("The second TDD frame comprises a second start-of-frame field (SOF2) . . . ."); *id.* at 29:26–28 ("an exemplary spread spectrum Broadcast Beam is used to transmit the start-of-frame fields (SOFl and SOF2)"). Moreover, the context of the claim language shows "start of frame" merely identifies the purpose of the field, and not a field name within a certain protocol. The Court therefore adopts that portion of Defendants' construction to which GAS agrees: "a field used to indicate the start of a frame."

E. "in said downlink portion of said TDD frame" ('931 Patent, Claims 28, 29)

GAS's Construction	Defendants' Construction
No construction necessary.	"in the same downlink portion of the same TDD frame"

Because GAS "has no substantive dispute with [Defendants'] construction," Dkt. No. 63 at 26, the Court adopts Defendants' construction of "in the same downlink portion of the same

TDD frame as urged."

F. "wireless communication device[s]" ('794 Patent, Claims 1–6); "first wireless transceiver operable to communicate with a base station" ('794 Patent, Claims 1, 6)

GAS's Construction	Defendants' Construction
No construction necessary.	"wireless device[s] in a fixed wireless access communication system" "a first fixed-site wireless transceiver operable to communicate with a fixed-site base station"

This dispute is similar to the parties' dispute about "wireless access network" and "wireless access devices" in Part IV.A. *supra*. Defendants again contend the recited network and devices must be "fixed." And they again point to a description of the present invention—that it "relates generally to a manner by which to provide mobile communications in a fixed wireless access (FWA) communication system." Dkt. No. 66 at 24 (quoting '794 Patent at 3:41–54). Defendants also stress the patent's embodiments show only FWA systems. *Id.* In resisting Defendants' construction, GAS relies on only the express claim language and claim differentiation, noting Claim 4 further limits the first and second wireless transceivers of Claim 1 to be "disposed in a fixed site subscriber station." Dkt. No. 63 at 26.

The Court reaches the same conclusions for these terms as it did for "wireless access network" and "wireless access devices"—there is no disclaimer or lexicography. Here, too, the "present invention" language concerns the goal of the invention rather than its structure, and there is no suggestion the structure of the invention or its operation changes based on whether the wireless network is "fixed" or "mobile." And as with the prior terms, the remainder of Defendants' intrinsic evidence comes from exemplary embodiments. Defendants do not allege lexicography or disclaimer based on specific excerpts of the patent, but rather from the "gist" of

the specification. On this record, that is not enough to narrow the ordinary meaning of these terms, and the Court will give them a "plain and ordinary meaning" construction.

G. "[routes/routing] information to the first mobile station and the second mobile station, respectively" ('794 Patent, Claims 1, 6)

GAS's Construction	Defendants' Construction
No construction necessary	"[selects/selecting] a network path over which information is to be transmitted to the first mobile station and [select/selecting] a network path over which information is to be transmitted to the second mobile station, respectively"

The claims recite a "second transceiver" that monitors signal characteristics and, based on those characteristics, "routes information" to mobile stations. '794 Patent at 10:38–44; *see also id.* at 11:19–22. Defendants frame this dispute as whether (1) the limitation can be met by merely forwarding packets to mobile stations, or (2) the limitation requires determining a specific path to the mobile stations. Dkt. No. 66 at 27.

In its briefing, GAS points to dictionary definitions of "routing" that it says equate "forwarding" with that term. Dkt. No. 63 at 29–30 (citing Dict. of IBM & Comput. Terminology, Dkt. No. 63-19 at 80 (defining "routing" as "the forwarding of a message unit along a particular path through a network")); *id.* at 30 (citing Webster's New World Dict., Dkt. No. 63-4 at 1170 (defining "routing" as "to direct, send, forward, or transport by a specified route")). Yet despite those definitions' references to specific paths or routes, GAS argues "'routing' relates more to the act of actually *sending* than on the *selection* of the desired route." *Id.*

Notably, GAS made different arguments at the hearing. First, it acknowledged the patent uses "routing" as urged by Defendants with respect to the base station, but stressed the specification does not disclose "routing" by the second transceiver. *See* Hr'g Tr., Dkt. No. 81 at 69:6–8 ("[T]o the extent routing means figuring out the path, [the base station is] where it takes

place, not at the second transceiver, according to the specification."); *see also id.* at 69:11–70:17. Instead, the second transceiver's "routing" is "less about the path and more about . . . the way the information has been assembled such that it can be received and decoded by the appropriate mobile station." *Id.* at 71:11–14. GAS contended the "routing" by the second transceiver relates to an encoding scheme. It pointed to an IEEE 802.11 technical document[3] to show a skilled artisan "would have understood how we route in wireless communications, how we use encoding schemes, and the selection of an encoding scheme to distinguish transmissions intended for one device from transmissions intended for a different device." *Id.* at 71:15–21.

Arguing for the requirement of a specific route, Defendants point to the claim language, the specification, statements by GAS during an IPR proceeding, and extrinsic evidence. Regarding the claim language, Defendants argue the use of both "transmitting" and "routing" as different steps of the method imply they have different meanings. Dkt. No. 66 at 28. As for the specification, Defendants note the disclosure's reference to "routing changes" under certain conditions. *Id.* at 29 (citing '794 Patent at 9:15–19, 9:38–41). In an IPR proceeding, GAS characterized the claimed transceivers as not merely transmitting and receiving signals but also performing routing functions. *Id.* at 30 (citing Patent Owner's Prelim. Resp., Dkt. No. 66-24 at 8). Finally, Defendants point to the two definitions cited by GAS, each of which refers to determining a path. *Id.*

Regarding the parties' briefing arguments, the Court agrees with Defendants that simply "forwarding information," without more, is not "routing." First, the cited definitions show the ordinary meaning of "routing" requires a specific path. And as described with reference to

[3] *See* High-Speed Physical Layer in the 5 GHz Band, Dkt. No. 77-1 at 3.

Figure 2, the communication system (10) includes an "access process" connected to a routing map (52) and that routes communication signals as part of a "handover" process:

> The routing map includes a listing of mobile stations [indexed together with] the locations at which the mobile stations are positioned. When communications are to be effectuated with a particular mobile station, such as communications originated by the correspondent node 34, the routing map is accessed *and the communication signals are routed to the mobile stations at the position indicated in the routing map. And, when a handover is effectuated, information routed to a mobile station but not yet delivered is rerouted to the WLAN transceiver to which communications have been handed over.*

'794 Patent at 9:6–19 (emphasis added). The immediately preceding paragraph explains what it means to "route" based on "signal characteristics," as recited in the claims:

> Determination of when to initiate handover of communications [of a mobile station from one transceiver to another] is made responsive to measurements of signal characteristics of communication signals communicated between the WLAN transceiver and the mobile station. In one implementation *signal characteristics are measured, or otherwise determined, at the mobile station and results of such measures or determinations . . . are reported back to the WLAN transceiver and appropriate control circuitry. Thereafter, if appropriate, the handover of communications is effectuated.*

Id. at 8:61–9:3 (emphasis added). From these paragraphs, a skilled artisan would understand "routing" requires more than just forwarding, but forwarding (or sending) along a specific path.

Nor were GAS's *hearing* arguments persuasive. Not only were they untimely,[4] GAS did not provide any evidence a skilled artisan would understand "routing" to mean choosing an appropriate encoding scheme. In fact, the 1999 IEEE document on which GAS relied does not include the words "route" or "routing." And although GAS highlights three sentences from that

[4] Nothing in its briefing suggested "routing" somehow could be construed as "encoding," and it did not serve the IEEE standards on which it relied until the night before the hearing.

standard that relate to orthogonal frequency division multiplexing (OFDM), the Court finds it implausible a skilled artisan would associate "routing" with using OFDM, especially given how "routing" is used elsewhere in the patent.

In the end, GAS's "encoding scheme" argument suffers from the same problems as its "sector" argument. First, adopting GAS's position would require the Court to give different meanings to "routing" in the claims and "routing" in the specification, which weighs heavily against GAS's position. *See Phillips*, 415 F.3d at 1314 (noting "claim terms are normally used consistently throughout the patent"). Second, GAS's argument that Defendants' construction is inconsistent with the disclosed embodiment starts with its opinion on what the claimed invention covers rather than the ordinary meaning of the claim language. In light of those problems, the Court construes "routes information to the first mobile station and the second mobile station, respectively" as "directs information through a specified path to the first mobile station and the second mobile station, respectively."

V. CONCLUSION

Disputed Term	The Court's Construction
"wireless access devices" ('931 Patent, Claims 1, 19, 28, 29)	Plain and ordinary meaning
"wireless access network" ('931 Patent, Claims 1, 19)	Plain and ordinary meaning
"subscriber premises" ('931 Patent, Claims 1, 19)	"buildings, places in buildings, or the like of a subscriber"
"sectors" ('931 Patent, Claims 1, 19, 28, 29)	"areas defined by an arc around the cell site, each covered by its own antenna"
"start of frame field" ('931 Patent, Claims 1, 19)	"a field used to indicate the start of a frame"

"in said downlink portion of said TDD frame" ('931 Patent, Claim 28, 29)	"in the same downlink portion of the same TDD frame"
"wireless communication device[s]" ('794 Patent, Claims 1–6)	Plain and ordinary meaning
"a first wireless transceiver operable to communicate with the base station" ('794 Patent, Claims 1, 6)	Plain and ordinary meaning
"[routes/routing] information to the first mobile station and the second mobile station, respectively" ('794 Patent, Claims 1, 6)	"directs information through a specified path to the first mobile station and the second mobile station, respectively"

The Court **ORDERS** each party not to refer, directly or indirectly, to its own or any other party's claim-construction positions in the presence of the jury. Likewise, the Court **ORDERS** the parties to refrain from mentioning any part of this opinion, other than the actual positions adopted by the Court, in the presence of the jury. Neither party may take a position before the jury that contradicts the Court's reasoning in this opinion. Any reference to claim construction proceedings is limited to informing the jury of the positions adopted by the Court.

SIGNED this 11th day of January, 2024.

ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE